IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Bruno Hans Haider et al.	§	Group Art Unit: 3768
Serial No.: ~~10/679,518~~ 10/697518	§	Examiner: Cattungal, Sanjay
Filed: October 30, 2003 T.W.	§	Confirmation No.: 8149
For: METHOD AND APPARATUS FOR TRANSDUCER PROBE	§	Atty. Docket: 134766-1

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September 2, 2009	/Patrick K. Patnode/
Date	Patrick K. Patnode

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal electronically filed on July 2, 2009 and in response to the Advisory Action mailed on May 28, 2009.

The Commissioner is authorized to charge the requisite fee of $540.00, and any additional fees, which may be necessary to advance prosecution of the present application, to Account No. 070868.

1. **REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the assignment by Bruno Haider and Robert Wodnicki, recorded at reel 014659, frame 0113, and dated October 30, 2003. Accordingly, General Electric Company, as the parent company of the Assignee of the above-referenced application, will be directly affected by the Board's decision in the pending appeal.

2. **RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. **STATUS OF CLAIMS**

Claims 1, 2, 4-8, 13, 14 and 21-27 are currently pending, are currently under final rejection and, thus, are the subject of this Appeal. Claims 3, 9-12 and 15-20 are canceled.

4. **STATUS OF AMENDMENTS**

Appellants have not submitted any amendments subsequent to the Final Office Action mailed on June 11, 2009 and the Advisory Action mailed on May 28, 2009. Consequently, there are no outstanding amendments to be considered by the Board.

5. **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention relates generally to the field of transducer probes. *See* Application, page 1, paragraph 1. More particularly, in certain embodiments, the invention relates to methods and apparatus for efficiently operating a probe having a large number of transducer elements. *See id.*

The Application contains four independent claims, namely, claim 1, claim 13, claim 21 and claim 26, which are the subject of this Appeal. The subject matter of the claim is summarized below.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention is related to a probe (*e.g.*, pages 5-8, paragraphs 0020-0021; 0024; 0030-0033), *see also,* FIGS. 1-6. The probe includes a plurality of transducers (*e.g.*, pages 6, paragraph 0022, line 8; page 9, paragraph 0030, line 7) and a plurality of reconfigurable pulsers (*e.g.*, page 5, paragraph 0020, lines 2, 3, 4 and 5; paragraph 0021, lines 7-10; page 6, paragraph 0022, line 1; page 8, paragraph 0026, line 3 and paragraph 0028, line 3; page 9, paragraph 0030, line 7), *see also,* FIGS. 1-6. The plurality of reconfigurable pulsers within the probe are responsive to one or more transmit timing signals received from an external system (*e.g.*, page 9, paragraph 0031, line 2, 5 and 6; paragraph 0033, line 7), to transmit pulses to the plurality of transducers, *see also,* FIGS. 1-4. The probe further includes a multiplexer (*e.g.*, page 6, paragraph 0022, line 8, 11-15; paragraph 23, line 1, 3, 6 and 8; page 7, paragraphs 0024-0025, line 1, 5; page 8, paragraph 0026, line 1, 3, 4; paragraph 0027, line 2) that receives said timing signals from said external system and provides said signals to said plurality of transducers, *see also,* FIGS. 1-5.

With regard to the aspect of the invention set forth in independent claim 13, discussions of the recited features of claim 13 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention is related to a probe that includes a plurality of transducers, an array of reconfigurable pulsers and a low voltage multiplexer (*e.g.*, page 6, paragraph 0022; page 7, paragraph 0023; page 8, paragraphs 0026-0027), *see also,* FIGS. 4. The low voltage multiplexer is responsive to a control signal from an external system and configured to distribute signals to the array of reconfigurable pulsers (*e.g.*, pages 6-9, paragraphs 0022-0031).

With regard to the aspect of the invention set forth in independent claim 21, discussions of the recited features of claim 21 can be found at least in the below cited

locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for operating a transducer probe (*e.g.*, page 3, paragraphs 0009). The method includes generating signals in an external system, controlling a plurality of pulsers in a probe utilizing the signals from the external system, and operating a plurality of transducers utilizing signals from the plurality of pulsers (*e.g.*, pages 5-6, paragraphs 0021-0023).

With regard to the aspect of the invention set forth in independent claim 26, discussions of the recited features of claim 26 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method of operating a transducer probe (*e.g.*, page 3, paragraph 0010). The method includes generating signals in the transducer probe, controlling a plurality of pulsers in the probe utilizing the one or more signal generated in the transducer probe, and operating a plurality of transducers utilizing signals from the plurality of pulsers (*e.g.*, pages 7-8, paragraphs 0024-0025).

A benefit of the invention, as recited in these claims is an improved transducer probe having an array of reconfigurable pulsers. The present invention provide the ability to transmit with very small elements and with larger numbers of elements than the number of available system channels Large numbers of cables between an imaging system and a probe handle are not required, and without presenting an excessively large capacitive load between transducers and pulsers. Moreover, these benefits accrue without the need for excessive power that would otherwise be required of other portable probe configurations. (*e.g.*, page 9, paragraph 0032)

6. **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

First Ground of Rejection for Review on Appeal:

Claims 1, 2, 4, 5, 7, 8, 13, 14, and 21-27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, Hwang et al., U.S. Patent No. 6,142,946 (hereinafter "Hwang"). Accordingly, Appellants respectfully urge the Board to review and reverse the rejection.

Second Ground of Rejection for Review on Appeal:

Claim 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hwang in view of Little et al., U.S. Patent No. 5,893,363 (hereinafter "Little"). Accordingly, Appellants respectfully urge the Board to review and reverse the rejection.

7. **ARGUMENT**

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under Sections 102(b) and 103(a). Accordingly, Appellants respectfully request full and favorable consideration by the Board, and reversal of the outstanding rejections. Appellants strongly believe that claims 1, 2, 4, 5, 6, 7, 8, 13, 14, and 21-27 are currently in condition for allowance.

A. **Ground of Rejection No. 1:**

The Examiner rejected claims 1, 2, 4, 5, 7, 8, 13, 14, and 21-27 under 35 U.S.C. §102(b) as being anticipated by Hwang. Of these, claims 1, 13, 21 and 26 are independent claims. The Appellants respectfully traverse this rejection.

Legal Precedent and Guidelines

First, the pending claims must be given an interpretation that is reasonable and consistent with the *specification*. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); *see also In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); *see also* M.P.E.P. §§ 608.01(o)

and 2111. Indeed, the specification is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.*

Second, interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. *See In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." *See Collegenet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 75 U.S.P.Q.2d 1733, 1738 (Fed. Cir. 2005) (quoting *Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326). The Federal Circuit has made clear that derivation of a claim term must be based on "usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art." *See id.*

Third, anticipation under section 102 can be found only if a single reference shows exactly what is claimed. Titanium Metals Corp. v. Banner, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. Atlas Powder v. E.I. du Pont, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Appellants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the identical invention "in as complete detail as contained in the ... claim" to support a prima facie case of anticipation. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989)

Fourth, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. In re Robertson, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing may result from a given set of circumstances is not sufficient. Id. In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. See id. Regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. See M.P.E.P. § 2173.05(g); In re Swinehart, 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); In re Schreiber, 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997). If the Examiner believes the functional limitation to be inherent in the cited reference, then the Examiner "must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art." Ex parte Skinner, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Inter. 1986).

Independent claims 1, 13, 21, 26 and their dependent claims

Appellants respectfully submit that Hwang does not teach or disclose the independent claim 1 and specifically the recitations of *a plurality of reconfigurable pulsers within said probe responsive to one or more transmit timing signals received from an external system to transmit pulses to said plurality of transducers, wherein each reconfigurable pulser is coupled to a respective transducer, and wherein said probe further includes a multiplexer that receives said timing signals from said external system and provides said signals to said plurality of transducers.* In a similar manner, Hwang does not teach or disclose the independent claim 13 and specifically the recitations of *an*

array of reconfigurable pulsers, each transducer responsive to pulses from a dedicated said reconfigurable pulser, wherein each reconfigurable pulser is coupled to a respective transducer; a low voltage multiplexer responsive to a control signal from an external system and configured to distribute signals to said array of reconfigurable pulsers; wherein said reconfigurable pulsers are responsive to said signals from said multiplexer to generate respective pulses to said transducers. In a similar manner, Hwang does not teach or disclose the independent claim 21 and specifically the recitations of a *controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system; and operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers, wherein each reconfigurable pulser is coupled to a respective transducer.* In a similar manner, Hwang does not teach or disclose the independent claim 26 and specifically the recitations of *controlling a plurality of reconfigurable pulsers in the probe utilizing the one or more signals generated in the transducer probe, wherein each reconfigurable pulser is coupled to a respective transducer; and operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers.*

A prima facie case of anticipation under 35 USC §102 requires showing that each limitation of a claim is found in a single reference, practice or device. Appellants respectfully assert that the present invention, as recited in independent claims 1, 13, 21 and 26 is patentable over the Hwang reference. To sustain a rejection under USC §102, a single reference must disclose each and every element of the claimed invention, the elements being configured in such a way as to fully disclose the claimed invention. The Appellants urge that the rejection of claims 1, 2, 4, 5, 7, 8, 13, 14, and 21-27 under 35 USC §102 (b) as being anticipated by the Hwang reference is unwarranted because the Hwang reference does not disclose each and every element of the claimed invention, specifically the cited claim elements of the present independent claims 1, 13, 21 and 26.

In the "Response to Arguments" section on Page 2, lines 1-12 of the Office Action mailed on May 28, 2009, the Examiner responded to the Appellant's arguments

about the rejection of claims 1, 2, 4-8, 13, 14, and 21-27 under 35 USC §102(b) as anticipated by Hwang. The Examiner responded to the Appellant's arguments about Hwang not teaching the "controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system; and operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers, wherein each pulser is configured to a respective transducer". The Examiner referred to Fig. 5 of Hwang reference and stated that Hwang teaches, "controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system (fig. 3 element 30)." The Examiner further stated that Hwang teaches operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers (Fig. 5 element 402, 404, 414 and 416), wherein each pulser is configured to a respective transducer (Fig. 5 element 1, 33, 65, and 97).

The Appellant respectfully states that anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under Section 102, a single reference must teach each and every element or step of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Thus, if the claims recite even one element not found in the cited reference, the reference does not anticipate the claimed invention. *A strict correspondence* between the claimed language and the cited reference must be established for a valid anticipation rejection.

Appellant respectfully states that going by Fig. 5 and its corresponding elements and the comments of the Examiner, first, the Examiner is apparently equating *Fig. 5 with controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system*, as is the case with the present application. Hwang, however only illustrates a transmit/receive multiplexer I.C. (Fig. 5). Within the

transmit/receive multiplexer I.C. only 8 out of 16 transducer elements can be driven at a time. Hence Hwang reference fails to disclose that each of the plurality of pulsers is *reconfigurable.* Accordingly, the Appellant respectfully requests reconsideration and allowance of all pending claims.

Claims 2, 4, 5, 6, 7 and 8 depends directly or indirectly from independent claim 1; and claim 14 depends from independent claim 13; claims 22, 23, 24 and 25 depend directly or indirectly from independent claim 21; claim 27 depends from independent claim 26. Their consideration and allowance are respectfully requested.

B. Ground of Rejection No. 2:

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Hwang in view of Little. The Appellants respectfully traverse this rejection.

Legal Precedent and Guidelines

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). In addressing obviousness determinations under 35 U.S.C. § 103, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, No. 04-1350 (April 30, 2007), reaffirmed many of its precedents relating to obviousness including its holding in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). In *Graham*, the Court set out an objective analysis for applying the statutory language of §103:

> Under §103, the scope and content of the prior art are to be determined, differences between the prior art and the claims at issue are to be ascertained, and the level of ordinary skill in the pertinent art are to be resolved. Against this background the obviousness or non-obviousness of the subject matter is to be determined. Such secondary considerations as commercial success, long-felt but unresolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *KSR*, s*lip op.* at 2 (citing *Graham*, 383 U.S. at 17-18).

In KSR, the Court also reaffirmed that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* at 14. In this regard, the *KSR* court stated that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does ... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *Id.* at 14-15. Traditionally, to establish a *prima facie* case of obviousness, the CCPA and the Federal Circuit have required that the prior art not only include all of the claimed elements, but also some teaching, suggestion, or motivation to combine the known elements in the same manner set forth in the claim at issue. *See, e.g., ASC Hospital Systems Inc. v. Montifiore Hospital,* 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984) (holding that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination.); *In re Mills,* 16 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 1990) (holding that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination). In *KSR*, the court noted that the demonstration of a teaching, suggestion, or motivation to combine provides a "helpful insight" in determining whether claimed subject matter is obvious. *KSR, slip op.* at 14. However, the court rejected a *rigid* application of the "TSM" test. *Id.* at 11. In this regard, the court stated:

> The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and explicit content of issued patents. The diversity of inventive pursuit and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. *Id.* at 15.

In other words, the *KSR* court rejected a rigid application of the TSM test which requires that a teaching, suggestion or motivation to combine elements in a particular manner must be explicitly found in the cited prior art. Instead, the *KSR* court favored a more expansive view of the sources of evidence that may be considered in determining an apparent reason to combine known elements by stating:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art all in order to determine whether there was an apparent reason to combine in the known elements in the fashion claimed in the patent at issue. *Id.* at 14.

The *KSR* court also noted that there is not necessarily an inconsistency between the idea underlying the TSM test and the *Graham* analysis, and it further stated that the broader application of the TSM test found in certain Federal Circuit decisions appears to be consistent with *Graham*. *Id.* at 17-18 (citing *DyStar Textilfarben GmbH and Co. v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (2006) ("Our suggestion test is in actuality quite flexible and not only permits but *requires* consideration of common knowledge and common sense"); *Alza Corp. v. Mylan Labs, Inc.*, 464 F.3d 1286, 1291 (2006) ("There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires a teaching to combine ... ")).

Furthermore, the *KSR* court did not diminish the requirement for objective evidence of obviousness. *Id.* at 14 ("To facilitate review, this analysis should be made explicit. See *In re Kahn,* 441 F.3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."); *see also, In re Lee,* 61 U.S.P.Q.2d 1430, 1436

(Fed. Cir. 2002) (holding that the factual inquiry whether to combine references must be thorough and searching, and that it must be based on *objective evidence of record*).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The Federal Circuit has warned that the Examiner must not, "fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *In re Dembiczak*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983); M.P.E.P. § 2145. Moreover, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. § 2143.01(VI). If the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *see* M.P.E.P. § 2143.01(V).

In order to rely on equivalence as a rational supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on Appellant's

disclosure or the mere fact that the components at issue are functional or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 U.S.P.Q. 340 (CCPA 1958); *see also* M.P.E.P. § 2144.06.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hwang in view of Little (U.S. Patent No. 5,893,363, hereinafter "Little").

Appellant respectfully submits that Hwang does not teach, suggest, or disclose each and every element of the independent claim 1, in its current form, and specifically the recitations of a probe comprising "a plurality of transducers; and a plurality of reconfigurable pulsers within said probe responsive to one or more transmit timing signals received from an external system to transmit pulses to said plurality of transducers, wherein each reconfigurable pulser is coupled to a respective transducer, and wherein *said probe further includes a multiplexer that receives said timing signals from said external system and provides said signals to said plurality of transducers.*" Therefore, the Appellant believes that Hwang does not render the independent claim 1 unpatentable under 35 USC §103(a).

Further, Little fails to overcome this deficiency of Hwang. Little discloses a hand held ultrasonic instrument is provided in a portable unit which performs both B mode and Doppler imaging. Thus, none of the cited references either taken alone or in any hypothetical combination, specifically teach or suggest or disclose the invention as recited in independent claim 1. Accordingly, Appellant respectfully submits that a prima facie case of obviousness cannot be established for independent claim 1. Claim 6 depends directly from independent claim 1 and is therefore believed to be patentable by dependency. Appellant respectfully requests that the Examiner withdraw the rejection under 35 USC 103.

Conclusion

Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: September 2, 2009

/Patrick K. Patnode/

Patrick K. Patnode
Reg. No. 40,121

General Electric Company
One Research Circle
Building K1, Room 3A54A
Niskayuna, New York 12309
Telephone: (518) 387-5286

8. **APPENDIX OF CLAIMS ON APPEAL**

Listing of Claims:

Claim 1. A probe comprising:

a plurality of transducers; and

a plurality of reconfigurable pulsers within said probe responsive to one or more transmit timing signals received from an external system to transmit pulses to said plurality of transducers, wherein each reconfigurable pulser is coupled to a respective transducer, and wherein said probe further includes a multiplexer that receives said timing signals from said external system and provides said signals to said plurality of transducers.

Claim 2. A probe in accordance with Claim 1 wherein said plurality of pulsers are responsive to a low voltage analog transmit timing signal.

Claim 4. A probe in accordance with Claim 1 further comprising a low voltage multiplexer configured to couple said transmit timing signals received from said external system to said pulsers.

Claim 5. A probe in accordance with Claim 4 wherein each said transducer is responsive to a dedicated said pulser.

Claim 6. A probe in accordance with Claim 1 wherein said pulsers comprise pulsers selected from the set consisting of bipolar pulsers, unipolar pulsars, and combinations thereof, and further comprising conversion circuitry configured to convert said transmit timing signals to low voltage signals to operate said pulsers.

Claim 7. A probe in accordance with Claim 1 further comprising a digital to analog converter (DAC) in said handle, said DAC responsive to a digital transmit timing

signal received from the external system to convert the digital transmit timing signal to an analog timing signal, and said pulsers are responsive to said analog timing signal.

Claim 8. A probe in accordance with Claim 1 wherein said transducers are ultrasound transducers and the pulsers are responsive to one or more transmit timing signals received from an imaging system.

Claim 13. A probe comprising:

a plurality of transducers;

an array of reconfigurable pulsers, each transducer responsive to pulses from a dedicated said reconfigurable pulser, wherein each reconfigurable pulser is coupled to a respective transducer;

a low voltage multiplexer responsive to a control signal from an external system and configured to distribute signals to said array of reconfigurable pulsers;

wherein said reconfigurable pulsers are responsive to said signals from said multiplexer to generate respective pulses to said transducers.

Claim 14. A probe in accordance with Claim 13 wherein said transducers are ultrasonic transducers and the external system is an imaging system.

Claim 21. A method for operating a transducer probe comprising:

generating one or more signals in an external system;

sending said one or more signals from said external system to a multiplexer included in said probe;

providing said one or more signals from said multiplexer to a plurality of transducers;

controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system; and

operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers, wherein each reconfigurable pulser is coupled to a respective transducer.

Claim 22. A method in accordance with Claim 21 wherein said signals from the external system comprise timing signals.

Claim 23. A method in accordance with Claim 22 wherein said operating a plurality of transducers utilizing signals from said plurality of pulsers comprises operating each said transducer utilizing a signal from a dedicated said pulser.

Claim 24. A method in accordance with Claim 21 further comprising generating timing signals in a handle of the probe utilizing said one or more signals from the external system.

Claim 25. A method in accordance with Claim 21 wherein the external system is an imaging system and said transducers are ultrasound transducers.

Claim 26. A method for operating a transducer probe comprising:

generating one or more signals in the transducer probe;

sending said one or more signals from said external system to a multiplexer included in said probe;

providing said one or more signals from said multiplexer to a plurality of transducers;

controlling a plurality of reconfigurable pulsers in the probe utilizing the one or more signals generated in the transducer probe, wherein each reconfigurable pulser is coupled to a respective transducer; and

operating said plurality of transducers utilizing signals from said plurality of reconfigurable pulsers.

Claim 27. A method in accordance with Claim 26 further comprising sending control signals from the probe to an external system.

9. EVIDENCE APPENDIX

None.

10. **RELATED PROCEEDINGS APPENDIX**

None.